

What is claimed is:

1. A system for a building system application comprising:
 - a database;
 - a data provider interface for converting between a common
5 database access method and a database application programming
interface (API); and
 - an application infrastructure for coupling an application program to
the data provider interface so that an application having common
database access method instructions may access the database
10 through the data provider interface.
2. The system of claim 1 wherein the database is comprised of a plurality of
databases.
- 15 3. The system of claim 2, the database being comprised of a real-time
database and a data mart.
4. The system of claim 3, the data mart being configured in one of a
snowflake and star data organization.
- 20 5. The system of claim 1, the application infrastructure further comprising:
common components for application support.

6. The system of claim 1, the application infrastructure further comprising:

Web-based components for coupling an application to another application over the Internet.

5 7. The system of claim 1, the application infrastructure further comprising:

operating system communication components for coupling an application to another application through an operating system.

8. The system of claim 7 wherein the operating system communication
10 components communicate through a Windows operating system.

9. The system of claim 6 wherein the Web-based components couple an application to another application over the Internet through a customer web portal.

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10. The system of claim 1 further comprising:

a configuration utility for developing a file structure representative of a building system and for associating configuration data with components identified in the file structure.

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11. The system of claim 1 further comprising:

a data collector interface for coupling external data sources to the database.

12. The system of claim 11 wherein the data collector interface converts data from the native format for an external data source to one that is compatible with the database structure.

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13. The system of claim 12 further comprising:
transaction services for generating instructions for the database API to store the converted data in the database.

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14. The system of claim 11 further comprising:
a scheduling service for activating the data collector interface to interrogate the external data sources for data to be stored in the database.

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15. A method for supporting a building system application comprising:
storing data in a database; and
converting between common database access method instructions and database application programming interface (API) instructions for the database so that an application having common database access method instructions may access the database.

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16. The method of claim 15 wherein the data are stored in a plurality of databases within the database.

17. The method of claim 15 wherein the data are stored in one of a real-time database and a data mart.

18. The method of claim 15 further comprising:

5 configuring the data mart in one of a snowflake and star data organization.

19. The method of claim 15 further comprising:

10 coupling common components to an application for communication support.

20. The method of claim 19, the communication component coupling comprising:

15 coupling an application to another application through a Web-based component for communication over the Internet.

21. The method of claim 19, the communication component coupling comprising:

20 coupling an application to another application through an operating system communication component for supporting application communication through the operating system.

22. The method of claim 21 wherein the operating system communication component coupling includes coupling Windows-based communication component to the application.

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23. The method of claim 20 wherein the application communication over the Internet communicates through a customer web portal.

24. The method of claim 15 further comprising:

10 developing a file structure having components representative of a building system; and
 associating configuration data with the components identified in the file structure.

15 25. The method of claim 15 further comprising:

 coupling external data sources to the database.

26. The method of claim 25 further comprising:

20 converting data from a native format for an external data source to one that is compatible with the database.

27. The method of claim 26 further comprising:

generating instructions for the database API to store the converted data in the database.

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28. The method of claim 27 further comprising:

interrogating, on a scheduled basis, the external data sources for data to be stored in the database.

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29. A method for processing an application comprising:

obtaining a list of point types used as inputs for an application from an application definition;

mapping each point type to an actual control system point name defined in a configuration file; and

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retrieving data for the actual control system point names from a database for processing by the application.

30. The method of claim 29, the data retrieval further comprising:

converting common database access instructions in the application to database access instructions for the database API; and

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converting responses from the database API to common database access responses for application processing.

31. The method of claim 30 further comprising:

generating outputs from the converted responses; and
delivering the outputs to a user.

32. The method of claim 31, the output delivery further comprising:

5 posting the outputs for retrieval at a customer web portal.

33. The method of claim 31, the output delivery further comprising:

Storing the outputs in the database.

34. A system for automatically generating building system application
solutions comprising:

10 a system design verifier for verifying an application definition; and
a system design converter coupled to the system design verifier,
the system design converter for converting verified application
definitions into computer statements for implementing a building
system application solution that corresponds to the application
15 definition.

35. The system of claim 34 wherein the system design verifier receives
XML files that identify HVAC components and a duct layout for a
building system; and

20 the system design converter converts a verified XML file into
engineering application language statements to implement the
building system application solution that corresponds to the XML
file.

36. The system of claim 35 wherein the system design converter generates engineering application language statements in the MATLAB language.
- 5 37. The system of claim 35 wherein the system design converter generates engineering application language statements in the MATHEMATICA language.
38. The system of claim 34 further comprising:
a computer tool interface coupled to the system design converter,
10 the computer tool interface for providing data from computer tools to the system design converter for incorporation within the computer statements that implement the building system application solution that corresponds to the application definition.
39. The system of claim 38 wherein the computer tool interface couples at
15 least one of a data organization tool, a data filtering tool, a statistical analysis tool, and an analytical tool to the system design converter.
40. The system of claim 39 wherein the data organization tool is a data base management system.
41. The system of claim 39 wherein the analytical method tool is a linear
20 programming module.

42. The system of claim 39 further comprising:

a data provider interface coupled to the system design converter
through the computer tool interface, the data provider for converting
between a common database access method and a database
application programming interface; and
the data organization tool uses a common database access method
to access a database coupled to the data provider.

43. The system of claim 34 further comprising:

an external program module interface coupled to the system design
converter, the external program module interface for providing
modular computer program components to the system design
converter for incorporation within the computer statements that
implement the building system application solution.

44. The system of claim 43 wherein the external program module
interface provides a proportional-integral-derivative loop control
module to the system design converter.

45. A method for automatically generating building system application
solutions comprising:

verifying an application definition; and
converting the verified application definition into computer
statements for implementing a building system application solution
that corresponds to the application definition.

46. The method of claim 45 further comprising:

receiving a XML file that identifies HVAC components and a duct layout for a building system; and
converting the verified XML file into engineering application language statements to implement the building system application solution that corresponds to the XML file.

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47. The method of claim 46, the conversion further comprising:

generating engineering application language statements in the MATLAB language.

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48. The method of claim 46, the conversion further comprising:

generating engineering application language statements in the MATHEMATICA language.

49. The method of claim 45 further comprising:

providing data from computer tools for incorporation within the computer statements that implement the building system application solution that corresponds to the application definition.

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50. The method of claim 49 further comprising:

coupling at least one of a data organization tool, a data filtering tool, a statistical analysis tool, and an analytical tool to provide data for incorporation within the computer statements implementing the building system application solution.

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50. The method of claim 50 wherein the data organization tool coupling
couples a data base management system for incorporation of data
from a database within the computer statements implementing the
building system application solution.

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52. The method of claim 50 wherein the analytical method tool coupling
couples a linear programming module for incorporation of data from
the linear programming module within the computer statements
implementing the building system application solution.

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53. The method of claim 50 further comprising:
converting between a common database access method and a
database application programming interface to access a database.

54. The method of claim 45 further comprising:

providing modular computer program components to the system
design converter for incorporation within the computer statements
that implement the building system application solution.

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55. The method of claim 54 wherein the modular computer program
component provision includes providing a proportional-integral-
derivative loop control module for incorporation within the computer
statements implementing the building system application solution.

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